



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,915	07/23/2003	Andrew Wells Phelps	UVD 0280 IA/UD 268	3052
23368 7590 02/26/2007 DINSMORE & SHOHL LLP ONE DAYTON CENTRE, ONE SOUTH MAIN STREET SUITE 1300 DAYTON, OH 45402-2023			EXAMINER ZHENG, LOIS L	
			ART UNIT 1742	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		02/26/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/625,915

Applicant(s)

PHELPS ET AL.

Examiner

Lois Zheng

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10, 12, 13, 37-49, 163 and 165-182 is/are pending in the application.
- 4a) Of the above claim(s) 41 and 42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12, 13, 37-40, 43-49, 163 and 165-182 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 8/9/06, 9/11/06.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 30 November 2006 has been entered.

### ***Status of Claims***

2. Claims 1, 37 and 163 are amended in view of amendments filed 25 October 2006. Claims 11, 14-36, 50-162 and 164 are canceled. Claims 41-42 are withdrawn from consideration. New claims 165-182 are added in view of the amendment. Therefore, claims 1-10, 12-13, 37-40, 43-49, 163 and 165-182 are currently under examination.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 4-5, 8-9, 12-13, 37-40 and 163 are rejected under 35 U.S.C. 102(b) as being anticipated by PCT publication WO 98/48075.

Tadokoro et al. US 6,200,672 B1(Tadokoro) is the national stage entry of the PCT publication document WO 98/48075, which is in Japanese. Therefore, the examiner will use the teachings of Tadokoro for the rejection of the instant claims in this Office Action.

Tadokoro teaches an aqueous metal surface treatment fluid comprising a rare earth element such as tetravalent cerium(col. 5 lines 6-9) and oxyacid anions such as phosphate, tungstate, vanadate anions, wherein the rare earth metal elements and the oxyacid anions form oxyacid compounds(col. 9 lines 28-33). Tadokoro further teaches a rare earth metal complex comprising rare earth elements such as tetravalent cerium and an inorganic compounds such as phosphates, nitrates and sulfates(col. 5 lines 27-31).

Regarding claims 1 and 12-13, the tetravalent cerium of Tadokoro reads on the claimed rare earth element and the phosphate, tungstate, vanadate, sulfate and nitrate of Tadokoro read on the claimed inorganic valence stabilizer. The oxyacid compound or the rare earth metal complex of Tadokoro reads on the rare earth/valence stabilizer complex as claimed.

With respect to the claim feature of a solid conversion coating formed on a metal substrate, the coating layer formed on the metal substrate as a result of applying the coating composition of Tadokoro is a solid conversion coating layer as claimed.

Regarding claim 163, Tadokoro further teaches that the solubility of the rare earth metal complex is no greater than 0.01 mol/l(col. 5 lines 36-38). Since about 25°C reads on room temperature and 760Torr is atmospheric pressure, the examiner asserts

Art Unit: 1742

that the solubility as taught by Tadokoro reads on the limitation of the rare earth/valence stabilizer complex being sparingly soluble as claimed.

With respect to the amended feature of "[t]he valence stabilizer consists essentially of an inorganic valence stabilizer" as recited in instant claims 1 and 163, Tadokoro still anticipates the instant claims 1 and 163 since applicant uses semi-open transitional phrase "consisting essentially of", which does not exclude the presence of additional elements, such as the organic compound of Tadokoro, as long as the additional elements do not materially effect the characteristics of applicant's invention. See MPEP 2111.03 [R-2]. It is well settled that if an applicant contends that additional steps or materials in the prior art are excluded by the recitation of "consisting essentially of," applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of applicant's invention. In re De Lajarte, 337 F.2d 870, 143 USPQ 256 (CCPA 1964). See also Ex parte Hoffman, 12 USPQ2d 1061, 1063-64 (Bd. Pat. App. & Inter. 1989).

Regarding claim 4, since Tadokoro teaches the claimed rare earth/valence stabilizer, the electrostatic barrier layer around the rare earth/valence stabilizer complex is inherent present as claimed.

Regarding claim 5, since Tadokoro teaches the claimed rare earth/valence stabilizer complex, the function of the rare earth/valence stabilizer complex as an ion exchange agent towards corrosive ions is inherent.

Regarding claim 8, Tadokoro further teaches the coated metal surface can be further covered by an over coat layer(col. 10 lines 35-38). Since Tadokoro teaches the

Art Unit: 1742

same rare earth/valence stabilizer complex as claimed in its coating fluid, the coating solution of Tadokoro inherently has the same adhesion enhancing morphology as claimed.

Regarding claim 9, since the oxyacid compound of Tadokoro reads on the claimed rare earth/valence stabilizer, the examiner asserts that the rare earth/valence stabilizer as taught by Tadokoro inherently has a central cavity containing cerium as claimed. In addition, since specifics of the additional ions are not recited in the claim and there are always impurity ions randomly distributed in the coating solution including the cavity of the rare earth metal complex, any ions, such as impurities, in the cavity of the rare earth metal complex, read on the claimed additional ion.

Regarding claims 37-40, Tadokoro teaches the presence of cerium ions which read on the claimed cationic solubility control agent. Tadokoro further teaches the presence of calcium, zinc, lanthanum, hydrogen, zirconium and titanium ions(col. 10 lines 9-18) which also read on the claimed cationic solubility control agent.

5. Claims 1, 4-5, 8-9, 12-13, 37-40, 43-45 and 163 are rejected under 35 U.S.C. 102(b) as being anticipated by DePue et al. US 5,322,560(DePue).

DePue teaches a slightly water soluble corrosion inhibitor compound in an aqueous solution for treating aluminum flake pigment(abstract). The corrosion inhibitor compound comprises a rare earth metal such as tetravalent cerium(col. 2 lines 55-60), a silicon salt and a metal oxo-complexes of Ti, V, Cr, Zr, Nb, Mo, Hf, Ta and W(col. 2 lines 27-36, col. 3 lines 17-22).

Regarding claims 1, 12-13 and 163, the tetravalent cerium as taught by DePue reads on the claimed rare earth element and the oxo-complexes of Ti, V, Cr, Zr, Nb, Mo, Hf, Ta and W reads on the claimed inorganic valence stabilizer. In addition, since the corrosion inhibiting compound of DePue is slightly soluble in water, it meets the limitation of "sparingly soluble in water at about 25°C and about 760Torr" as recited in instant claim 163. Therefore, the claimed rare earth/valence stabilizer complex is inherently present in the corrosion inhibiting compound of DePue.

With respect to the claim feature of a solid conversion coating formed on a metal substrate, the coating layer formed on the metal substrate as a result of applying the coating composition of DePue is a solid conversion coating layer as claimed.

With respect to the amended feature of "[t]he valence stabilizer consists essentially of an inorganic valence stabilizer" as recited in instant claims 1 and 163, Tadokoro still anticipates the instant claims 1 and 163 since applicant uses semi-open transitional phrase "consisting essentially of", which does not exclude the presence of additional elements as long as the additional elements do not materially effect the characteristics of applicant's invention. See MPEP 2111.03 [R-2]. It is well settled that if an applicant contends that additional steps or materials in the prior art are excluded by the recitation of "consisting essentially of," applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of applicant's invention. In re De Lajarte, 337 F.2d 870, 143 USPQ 256 (CCPA 1964). See also Ex parte Hoffman, 12 USPQ2d 1061, 1063-64 (Bd. Pat. App. & Inter. 1989).

Regarding claims 4-5, since DePue teaches the inherently teaches the claimed rare earth/valence stabilizer complex, the claimed electrostatic barrier layer is also inherently present around the rare earth/valence stabilizer complex of DePue as recited in instant claim 4. The rare earth/valence stabilizer complex of DePue is also inherently capable of acting as an ion exchange agent towards corrosive ions as recited in instant claim 5.

Regarding claim 8, DePue further teaches the coated metal surface can be further covered by a clear over coat layer(col. 6 lines 61-63). Since DePue teaches the same rare earth/valence stabilizer complex as claimed in its coating fluid, the coating solution of DePue inherently has the same adhesion enhancing morphology as claimed.

Regarding claim 9, since DePue teaches the claimed rare earth/valence stabilizer complex, it also inherently teaches the central cavity containing cerium as recited in instant claim 9. In addition, since specifics of the additional ions are not recited in the claim and there are always impurity ions randomly distributed in the coating solution including the cavity of the rare earth metal complex, any ions, such as impurities, in the cavity of the rare earth metal complex, read on the claimed additional ion.

Regarding claims 37-40, DePue further teaches the presence of Na ions from the metal oxo-complexes(col. 3 lines 17-22), which reads on the cationic solubility control agent as claimed. In addition, the Ce, Ti, Zr, V, Cr, W, Mo, Nb, Hf, Ta as taught by DePue also read on the claimed cationic solubility control agent(col. 2 lines 27-36, col. 3 lines 17-22).



Art Unit: 1742

Regarding claim 43, DePue teaches that the coating prepared by applying the corrosion inhibiting compound contains is colored as claimed.

Regarding claims 44-45, DePue further teaches a color brightener(col. 6 lines 12-28) which read on the agent for improving color-fastness.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2-3 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tadokoro.

The teachings of Tadokoro are discussed in paragraph 4 above.

Regarding claims 2-3, Tadokoro further teaches that the solubility of the rare earth metal complex is no greater than 0.01 mol/l(col. 5 lines 36-38). Since about 25°C reads on room temperature and 760Torr is atmospheric pressure, the examiner asserts that the solubility of no greater than 0.01 mol/l as taught by Tadokoro overlaps the solubility of about  $5 \times 10^{-1}$  and about  $1 \times 10^{-5}$  mol/l as recited in instant claim 2 and the solubility of about  $5 \times 10^{-2}$  and about  $5 \times 10^{-5}$  mol/l as recited in instant claim 3.

Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed solubility from the solubility of Tadokoro would have been obvious to one of ordinary skill in the art since Tadokoro teaches the same utilities in its disclosed solubility range.

Regarding claims 6-7, Tadokoro further teaches that the coating thickness is 0.1 microns to 10 microns(col. 10 lines 27-34) which overlaps the claimed about 25-10,000 nanometers as recited in instant claim 6 and the claimed about 100-500 nanometers as recited in instant claim 7. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed coating thickness from the coating thickness of Tadokoro would have been obvious to one of ordinary skill in the art since Tadokoro teaches the same utilities in its disclosed coating thickness range.

8. Claims 43-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tadokoro in view of Dattilo US 6,291,018 B1(Dattilo).

The teachings of Tadokoro are discussed in paragraphs 4 and 7 above. However, Tadokoro does not explicitly teach an agent to improve color-fastness as claimed.

Dattilo teaches a metal surface treatment coating composition comprising color pigments such as carbon black and phthalocyanines(col. 5 lines 34-41).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated color pigments such as carbon black and phthalocyanines as taught by Dattilo into the coating composition of Tadokoro in order to provide decorative effect to the coating formed as taught by Dattilo(col. 5 lines 34-38).

Therefore, the coating composition of Tadokoro in view of Dattilo is colored as recited in instant claim 43 and also comprises an agent that improves color-fastness as recited in instant claim 44. Color pigments such as carbon black and phthalocyanines

Art Unit: 1742

as taught by Tadokoro in view of Dattilo also read on the claimed active UV blocker as recited in instant claims 45-46.

9. Claims 2-3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over DePue.

The teachings of DePue are discussed in paragraph 5 above.

Regarding claims 2-3, DePue further teaches the solubility of the corrosion inhibiting compound is no more than  $10^{-3}$  m/l(col. 3 lines 4-6), which overlaps the solubility of about  $5 \times 10^{-1}$  and about  $1 \times 10^{-5}$  mol/l as recited in instant claim 2 and the solubility of about  $5 \times 10^{-2}$  and about  $5 \times 10^{-5}$  mol/l as recited in instant claim 3.

Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed solubility from the solubility of DePue would have been obvious to one of ordinary skill in the art since DePue teaches the same utilities in its disclosed solubility range.

Regarding claim 6, DePue further teaches that the coating thickness is about 1-150 microns(col. 6 lines 57-58), which encompasses the claimed about 25-10,000 nanometers as recited in instant claim 6. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed coating thickness from the coating thickness of Tadokoro would have been obvious to one of ordinary skill in the art since Tadokoro teaches the same utilities in its disclosed coating thickness range.

10. Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over DePue in view of Dattilo US 6,291,018 B1(Dattilo).

The teachings of DePue are discussed in paragraphs 5 and 9 above. However, DePue does not explicitly teach an agent to improve color-fastness as claimed.

Dattilo teaches a metal surface treatment coating composition comprising color pigments such as carbon black and phthalocyanines(col. 5 lines 34-41).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated color pigments such as carbon black and phthalocyanines as taught by Dattilo into the corrosion inhibiting compound of DePue in order to provide decorative effect to the coating formed as taught by Dattilo(col. 5 lines 34-38).

***Allowable Subject Matter***

11. Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. Claims 165-182 are allowed.

13. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not teach or fairly suggest, either alone or in combination, the claimed solid conversion coating comprising the claimed rare earth/valence stabilizer complex, at least one rare earth element is in tetravalent oxidation state and the rare earth/valence stabilizer complex has a central cavity containing a cerium, praseodymium, or terbium ion and an additional ion as listed in instant claim 165.

***Response to Arguments***

14. Applicant's arguments filed 25 October 2006 have been considered but are not persuasive.

Applicant argues that Tadokoro teaches a complex between a rare earth element and an organic compound and the inorganic compound it only added as a ligand and Tadokoro does not teach that "the valence stabilizer consists essentially of an inorganic valence stabilizer".

The examiner does not find applicant's argument persuasive since Tadokoro teaches that the rare earth metal complex also contains an inorganic compound(col. 5 lines 24-27). Therefore, Tadokoro seems to include both organic and inorganic compounds as part of the rare earth metal complex. Since applicant only uses semi-open transitional phrase "consisting essentially of" the examiner concludes that the coating of Tadokoro meets the limitations of the instant invention absent of factual evidence demonstrating that the additional presence of organic compound materially effects the characteristics of the instant invention.

Applicant also argues that neither Tadokoro nor DePue teaches a conversion coating.

The examiner does not find applicant's argument persuasive since Tadokoro's coating composition and DePue's coating composition are substantially the same as the claimed coating composition, therefore, one of ordinary skill in the art would have expected them to also react with the metal surface to produce a conversion coating. Tadokoro's coating composition comprises organic and inorganic phosphoric acid

Art Unit: 1742

compounds containing phosphate, which would have caused at least some reaction with the underlying metal surface. Therefore, the solid coating as taught by Tadokoro reads on a conversion coating based on the broadest reasonable interpretation. In addition, the teaching of Tadokoro's that the layer matrix physically holds the rare earth metal complex in the layer on the metal surface and attaches to the metal sheet only directed to the adhesion of the coating of Tadokoro and the metal substrate and does not directly implying no chemical reaction between the coating and the metal substrate. Improvement of adhesion is already desirable in the conversion coating art.

Furthermore, the water soluble salt in the coating composition of DePue would also have caused, at least some reaction with the underlying metal surface. Therefore, the solid coating as taught by DePue reads on the claimed conversion coating based on the broadest reasonable interpretation. If applicant questions the ability of coating composition of Tadokoro or DePue to produce a conversion coating, the applicant is invited to provide factual evidence data showing that there are no chemical reactions taking place when applying the compositions of Tadokoro or DePue to the metal substrate.

Applicant further argues that neither Tadokoro nor DePue teaches the claimed additional ion in the central cavity of the rare earth metal complex.

The examiner respectfully disagrees. Any coating solution would contain a certain level of impurities and the impurities are randomly distributed. Therefore, the impurities in the coating solutions of Tadokoro or Depue would also be randomly distributed through out the coating solutions including the central cavity of the rare earth

Art Unit: 1742

metal complex. Therefore, any impurity in the central cavity of the rare earth metal complex would read on the claimed additional ion.

Applicant further argues that neither Tadokoro nor DePue teach the use of solubility control agents as claimed.

The examiner does not find applicant's argument persuasive since Tadokoro teaches the claimed cerium, calcium, zinc, lanthanum, hydrogen, zirconium and titanium ions present in its coating composition and DePue teaches presence of Na, Ce, Ti, Zr, V, Cr, W, Mo, Nb, Hf, Ta ions in the coating composition. Therefore, these ions would inherently function as a solubility control agent to the same degree in the prior art as in the claimed invention.

Applicant further argues that DePue teaches a soluble rare earth metal salt, not a rare earth metal complex as claimed.

The examiner does not find applicant's argument persuasive since DePue teaches a slightly water soluble corrosion inhibitor compound which is a product of a rare earth metal salt, a metal oxo-complex and a silicon salt. The rejection ground is based on this slightly water soluble corrosion inhibitor compound in an aqueous solution as taught by DePue, which reads on the claimed rare earth metal/valence stabilizer complex.

Applicant further argues that DePue does not teach the claimed agent for improving color fastness.

The rheology control agent as taught by DePue controls the metallic appearance of the coating and maximizes the brightness and the darkness of the coating by fixing

Art Unit: 1742

the pigment flake surface in an alignment parallel to the surface. Therefore, the rheology control agent as taught by DePue ultimately enhances the color of the coating, which leads the examiner to conclude that the rheology control agent is a color brightener that would read on the claimed agent for color fastness.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LLZ

ROY KING  
SUPERVISOR  
FAX 571-273-8300  
R